



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

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January 9, 2016

Mr. John Nelson
Massachusetts Water Resources Authority
2 Griffin Way
Chelsea, MA 02150

Chelsea
Transmittal No.: X254620
Application No.: NE-16-014
Class: SM25
FMF No.: 228675
AIR QUALITY PLAN APPROVAL

Dear Mr. Nelson:

The Massachusetts Department of Environmental Protection (“MassDEP”), Bureau of Air and Waste, has reviewed your Limited Plan Application (“Application”) listed above. This Application concerns the proposed construction, substantial reconstruction, alteration and/or operation of the Chelsea Creek Headworks, which is located at 340 Marginal Street in Chelsea, Massachusetts (“Facility”).

This Application was submitted in accordance with 310 CMR 7.02 Plan Approval and Emission Limitations as contained in 310 CMR 7.00 “Air Pollution Control” regulations adopted by MassDEP pursuant to the authority granted by Massachusetts General Laws, Chapter 111, Section 142 A-O, Chapter 21C, Section 4 and 6, and Chapter 21E, Section 6. MassDEP’s review of your Application has been limited to air pollution control regulation compliance and does not relieve you of the obligation to comply with any other regulatory requirements.

MassDEP has determined that the Application is administratively and technically complete and that the Application is in conformance with the Air Pollution Control regulations and current air pollution control engineering practice, and hereby grants this **Plan Approval** for said Application, as submitted, subject to the conditions listed below.

Please review the entire Plan Approval, as it stipulates the conditions with which the Facility owner/operator (“Permittee”) must comply in order for the Facility to be operated in compliance with this Plan Approval.

1. DESCRIPTION OF FACILITY AND APPLICATION

The following sections contained an overview of the facility, a list of the existing plan approval(s), the purpose of the Permittee's Application, and the applicable regulatory requirements that the proposed project is subject.

A. Facility Description

The Chelsea Creek Headworks is a major pumping station for handling of wastewater from the area northwest of the Boston Metropolitan Area including the following cities and towns: Arlington, Bedford, Belmont, Burlington, Cambridge, Chelsea, Everett, Lexington, Malden, Medford, Melrose, Reading, Revere, Somerville, Stoneham, Wakefield, Wilmington, Winchester, and Woburn. The Facility includes the following equipment and areas that generate odors (herein referred to as the Headworks System or HW) that are controlled by the existing odor control system (i.e., two existing wet scrubbers):

- Grease Filter and Mist Eliminators
- Grit and screenings disposal containers
- Mezzanine
- Equipment space above Treatment Channels
- Ejector Pits
- Treatment Channels In-Service
- Treatment Channels Out-of-Service
- Dewatering Pump Pit

B. Existing Plan Approval

The Chelsea Creek Headworks is permitted under an existing plan approval MBR-86-IND-121, which limits potential emissions of total reduced sulfur (TRS) and volatile organic compounds (VOC). The proposed upgrades will not increase facility-wide emissions.

C. Description of proposed emission units

The Permittee submitted a Limited Plan Application for the installation and operation of three new grease filter/mist eliminators and three new carbon adsorption beds that will replace the two existing wet scrubbers. The grease filter/mist eliminator (GF) is used to protect the carbon adsorption bed from being blinded, by removing grease, moisture and particulate. Each GF is followed by a new carbon adsorption bed (CA). These three GF/CA units will operate in parallel to treat air collected from various odor sources as listed in Table 1 below.

D. Applicable Regulatory Requirements

This project is required to comply with Best Available Control Technology (“BACT”) under 310 CMR 7.02. MassDEP has determined that the emission limitations listed in Table 2 below represents BACT for this project.

2. EMISSION UNIT (EU) IDENTIFICATION

Each Emission Unit (EU) identified in Table 1 is subject to and regulated by this Plan Approval:

Table 1			
EU#	List of Odor Sources at Headworks	Design Capacity	Pollution Control Device (PCD)
HW	<ul style="list-style-type: none"> • Grease Filter and Mist Eliminators • Grit and screenings disposal containers • Mezzanine • Equipment space above Treatment Channels • Ejector Pits • Treatment Channels In-Service • Treatment Channels Out-of-Service • Dewatering Pump Pit 	The total exhaust air from the wastewater treatment headworks process area is 108,700 scfm.	<p>PCD-1A, 1B, 1C each consist of a grease filter and mist eliminator (GF) unit</p> <p>PCD-2A, 2B, 2C each consist of a new Carbon Adsorber Bed (CA) Model RJV-5714 (rated for 54,350 scfm)</p> <p>Overall TRS control efficiency $\geq 99.0\%$. The operating pressure drop across each carbon bed is approx. 5.0 inches, water column.</p>

Table 1 Key:

EU# = Emission Unit Number
PCD = Pollution Control Device
HW = Headworks System
% = percent
scfm = standard cubic feet per minute
approx. = approximately
TRS = Total Reduced Sulfur

3. **APPLICABLE REQUIREMENTS**

A. **Operational and Emission Limits**

The Permittee is subject to, and shall not exceed the Operational, Production, and Emission Limits as contained in Table 2:

Table 2			
EU#	Operational Limit	Air Contaminant	Emission Limits
HW	Maximum air flow rate from headworks area is 108,700 scfm.	TRS	≤ 1.0 parts per million ≤ 1.0 tons per rolling 12-month period
		VOC	≤ 10.0 parts per million ≤ 2.2 tons per rolling 12-month period

Table 2 Key:

EU# = Emission Unit Number
HW = Headworks System
HAP (total) = total Hazardous Air Pollutants
scfm = standard cubic feet per minute
TRS = Total Reduced Sulfur
VOC = Volatile Organic Compounds

B. **Compliance Demonstration**

The Permittee is subject to, and shall comply with, the monitoring, testing, recordkeeping, and reporting requirements as contained in Tables 3, 4, and 5 below:

Table 3	
EU#	Monitoring and Testing Requirements
HW	1. The Permittee shall monitor the differential pressure drop across each grease filter/mist eliminator and carbon adsorption bed on a daily basis.
	2. The Permittee shall monitor the hydrogen sulfide (H ₂ S) and volatile organic compounds (VOC) emissions on a monthly basis.
	3. The Permittee shall monitor the carbon adsorber bed activity level for each

Table 3	
EU#	Monitoring and Testing Requirements
HW	carbon adsorber on a quarterly basis.
	4. If and when MassDEP requires it, the Permittee shall conduct emission testing in accordance with EPA Reference Test Methods and regulation 310 CMR 7.13.
	5. The Permittee shall monitor all operations to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.

Table 3 Key:

EU# = Emission Unit Number

HW = Headworks System

EPA = Environmental Protection Agency

CMR = Commonwealth of Massachusetts Regulation

Table 4	
EU#	Recordkeeping Requirements
HW	1. The Permittee shall record the differential pressure drop across each grease filter/mist eliminator and carbon adsorption bed on a daily basis.
	2. The Permittee shall record the hydrogen sulfide (H ₂ S) and volatile organic compounds (VOC) on a monthly basis.
	3. The Permittee shall record the carbon bed activity level for each carbon adsorber on a quarterly basis.
	4. The Permittee shall maintain adequate records on-site to demonstrate compliance status with all operational, production, and emission limits contained in Table 2 above. Records shall also include the actual emissions of air contaminant(s) emitted for each calendar month and for each consecutive twelve-month period (current month plus prior eleven months). These records shall be compiled no later than the 15 th day following each month. An electronic version of the MassDEP approved record keeping form, in Microsoft Excel format, can be downloaded at http://www.mass.gov/eea/agencies/massdep/air/approvals/limited-emissions-record-keeping-and-reporting.html#WorkbookforReportingOn-SiteRecordKeeping .
	5. The Permittee shall maintain records of monitoring and testing as required by Table 3.
	6. The Permittee shall maintain a copy of this Plan Approval, underlying Application and the most up-to-date Standard Operating and Maintenance Procedure (SOMP) for the Emission Units approved herein on-site.
	7. The Permittee shall maintain a record of routine maintenance activities performed on the approved EU(s). The records shall include, at a minimum, the type or a description of the maintenance performed and the date and time the work was completed.

Table 4	
EU#	Recordkeeping Requirements
HW	8. The Permittee shall maintain a record of all malfunctions affecting air contaminant emission rates on the approved EU(s). At a minimum, the records shall include: date and time the malfunction occurred; description of the malfunction; corrective actions taken; the date and time corrective actions were initiated and completed; and the date and time emission rates and monitoring equipment returned to compliant operation.
	9. The Permittee shall maintain records to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	10. The Permittee shall maintain records required by this Plan Approval on-site for a minimum of five (5) years.
	11. The Permittee shall make records required by this Plan Approval available to MassDEP and EPA personnel upon request.

Table 4 Key:

EU# = Emission Unit Number
EPA = Environmental Protection Agency
CMR = Commonwealth of Massachusetts Regulation
HW = Headworks System

Table 5	
EU#	Reporting Requirements
HW	1. The Permittee shall promptly notify the MassDEP of the date of equipment replacement and the date of actual startup for pollution control devices.
	2. The Permittee shall notify the Northeast Regional Office of MassDEP, Bureau of Air and Waste, (BAW), Permit Chief by telephone at 978-694-3200, email at nero.air@state.ma.us , fax at 978-694-3499, as soon as possible, but no later than three (3) business days after discovery of an exceedance(s) of Table 2 requirements. A written report shall be submitted to the Permit Chief at MassDEP within ten (10) business days thereafter and shall include: identification of exceedance(s), duration of exceedance(s), reason for the exceedance(s), corrective actions taken, and action plan to prevent future exceedance(s).
	3. The Permittee shall submit to MassDEP all information required by this Plan Approval over the signature of a “Responsible Official” as defined in 310 CMR 7.00 and shall include the Certification statement as provided in 310 CMR 7.01(2)(c).
	4. The Permittee shall report every three years to MassDEP, in accordance with

Table 5	
EU#	Reporting Requirements
HW	310 CMR 7.12, all information as required by the Source Registration/Emission Statement Form. The Permittee shall note that any minor changes such as under 310 CMR 7.02(2)(e), 7.03 and/or 7.26, do not require Plan Approval.
	5. Provide a copy to MassDEP of any record required to be maintained by this Plan Approval within 30-days from MassDEP's request.
	6. Submit to MassDEP for approval a stack emission test protocol, at least 45 days prior to emission testing, for emission testing as defined in Table 3 'Monitoring and Testing Requirements'.
	7. Submit to MassDEP a final stack emission test results report, within 60 days after emission testing, for emission testing as defined in Table 3 'Monitoring and Testing Requirements'.

Table 5 Key:

EU# = Emission Unit Number
HW = Headworks System
CMR = Commonwealth of Massachusetts

4. SPECIAL TERMS AND CONDITIONS

- A. The Permittee shall comply with the Special Terms and Conditions as contained in Table 6 below:

Table 6	
EU#	Special Terms and Conditions
HW	1. This Plan Approval, Transmittal. No. X254620, supersedes the Plan Approval No. MBR-86-IND-121, issued to the Permittee on May 12, 1997.
	2. No person shall operate a facility constructed, substantially reconstructed, or altered pursuant to 310 CMR 7.02(3)(f) except in conformance with the requirements established therein and in conformance with the specific written plan approval requirements.

Table 6 Key:

EU# = Emission Unit Number
HW = Headworks System
CMR = Commonwealth of Massachusetts

- B. The Permittee shall install and use an exhaust stack, as required in Table 7, on the Emission Unit that is consistent with good air pollution control engineering practice and that discharges so as to not cause or contribute to a condition of air pollution. Each exhaust stack shall be

configured to discharge the gases vertically and shall not be equipped with any part or device that restricts the vertical exhaust flow of the emitted gases, including but not limited to rain protection devices known as “shanty caps” and “egg beaters.”

- C. The Permittee shall install and utilize an exhaust stack with the following parameters, as contained in Table 7 below, for the Emission Unit that is regulated by this Plan Approval:

Table 7				
EU#	Stack Height Above Ground (feet)	Stack Inside Exit Dimensions (feet)	Stack Gas Exit Velocity Range (feet per second)	Stack Gas Exit Temperature Range (°F)
HW	47	8	18 to 36	50 to 100

Table 7 Key:

EU# = Emission Unit Number
HW = Headworks System
°F = Degree Fahrenheit

Should you have any questions or comments regarding this letter, please feel free to contact Joseph Su at (978) 694-3200 or joseph.su@state.ma.us.

Sincerely,

This final document copy is being provided to you electronically by the
Department of Environmental Protection. A signed copy of this document
is on file at the DEP office listed on the letterhead.

Susan Ruch
Acting Permit Chief and
Deputy Regional Director
Bureau of Air and Waste

This final document copy is being provided to you electronically by the
Department of Environmental Protection. A signed copy of this document
is on file at the DEP office listed on the letterhead.

Joseph Su
Environmental Engineer

cc: Chelsea City Hall, 500 Broadway, Chelsea MA 02150, Attn: Board of Health Director
Chelsea City Hall, 500 Broadway, Chelsea MA 02150, Attn: Chelsea Fire Department Chief
Arcadis US, Inc., 500 Edgewater Drive, Suite 511, Wakefield, MA 01880, Attn: Mr. William D. Casey, Jr.

ecc: MassDEP – NERO: Edward Braczyk, Martha Bolis

MassDEP – Boston: Yi Tian
MWRA – Susan Marx